

**Staff Summary  
Method 2B Application**

**Shanghai Ming Green Environmental Protection Technology Co., Ltd.  
Used Cooking Oil Biodiesel Produced  
(BIOD019)**

Deemed Complete Date: June 17, 2014  
Posted for Comment Date: October 24, 2014  
Certified Date: TBD

**Pathway Summary**

Shanghai Ming Green Environmental Protection Technology Co., Ltd. (Shanghai Ming Green), which operates a biodiesel plant in Minhang District, Shanghai, China, worked with ARB staff to develop a Low Carbon Fuel Standard pathway covering the production of biodiesel from used cooking oil (UCO) in Shanghai. This pathway was developed using standard LCFS UCO biodiesel production inputs<sup>1</sup>, along with electrical energy generation and transportation inputs specific to Shanghai, China. No confidential company-specific information was used in the development of this pathway. The feedstock is rendered using the low energy “non-cooking” process.<sup>2</sup> Fuel production and rendering are accomplished using diesel and electricity. No natural gas is used in these processes at the Shanghai Ming Green facility. The biodiesel fuel is produced using the standard fatty acid methyl ester (FAME) transesterification process.

This pathway would be available to Shanghai Ming Green, and, through the Method 1 process, to any other producers in Shanghai, China that utilize the feedstock and production processes and energy use profile, which specifies the percentage of electricity generated from residual oil, natural gas, and coal described in this pathway.

**Carbon Intensity of Fuel Produced**

The Low Carbon Fuel Standard (LCFS) Lookup Table currently contains no UCO-to-biodiesel pathway for facilities operating in Shanghai, China. Shanghai Ming Green's application, therefore, falls under the Method 2B provisions of the LCFS regulation. As such, it is not subject to the substantiality requirements with which Method 2A applications must comply (a minimum improvement of five gCO<sub>2</sub>e/MJ, and a minimum production volume of ten million gallons per year). The proposed fuel pathway carbon intensity is shown in the following table.

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<sup>1</sup> [http://www.arb.ca.gov/fuels/lcfs/092309lcfs\\_uco\\_bd.pdf](http://www.arb.ca.gov/fuels/lcfs/092309lcfs_uco_bd.pdf)

<sup>2</sup> ARB developed two California UCO-to-Biodiesel pathways ([http://www.arb.ca.gov/fuels/lcfs/092309lcfs\\_uco\\_bd.pdf](http://www.arb.ca.gov/fuels/lcfs/092309lcfs_uco_bd.pdf)). These pathways differ only in the amount of energy used to render the feedstock. The high-energy process uses more energy to heat the UCO than does the low-energy process.

### Proposed Lookup Table Entry

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO <sub>2</sub> e/MJ (Including Indirect Effects)		
			Direct Emission	Land Use or Other Indirect Effect	Total
Biodiesel	BIOD019	2B Application*: Shanghai, China, Used Cooking Oil; biodiesel produced in Shanghai, China; Cooking not required	16.86	0	16.86

\*Specific Conditions Apply

Operations at the plant will be subject to the following conditions designed to ensure that the carbon intensity (CI) of the Shanghai Ming Green pathway will remain at or below the value shown in the above table. These conditions must be met for every gallon sold in California:

- The feedstock to the Shanghai Ming Green plant must be used cooking oil (UCO) that was rendered using the centrifugal and low-energy process for all gallons of biodiesel sold in California.
- The total pathway-specific energy use (BTU/lb of finished fuel) values reported in Table 1 of the Shanghai Ming Green Method 2B application shall not be exceeded.

### **Staff Analysis and Recommendation**

Staff has reviewed the Shanghai Ming Green Plant application and finds the following:

- Staff replicated, using the CA-GREET spreadsheet, the carbon intensity value calculated by the applicant; and
- Staff agrees that the plant's actual energy consumption is not likely to exceed the energy consumption levels specified in the Method 2B application.

On the basis of these findings, staff recommends that Shanghai Ming Green's application for a Method 2B pathway be certified.